

CLAIMS

What Is Claimed Is:

1. A method of allocating memory buffer space for traffic of
5 network connections, the method comprising:

designating fixed buffer allocation space, wherein
buffers in the fixed buffer allocation space are
associated with fixed buffer allocation queue
identifications; and

10 designating prioritized fair share buffer space, wherein
buffers in the prioritized fair share buffer space
are associated with prioritized fair share queue
identifications.
- 15 2. The method of Claim 1, wherein the step of designating
fixed buffer allocation space includes reserving a semi-
permanent portion of the fixed buffer allocation space
for the network connections.
- 20 3. The method of Claim 1, wherein the step of designating
prioritized fair share buffer space further comprises
determining a weighting value for each network
connection, and wherein a network connection having a
higher weighting value is proportionately allocated a
25 greater amount of prioritized fair share buffer space.

4. The method of Claim 3, further comprising:
receiving traffic of a particular network connection;
determining a particular buffer allocation for the
5 traffic of the particular network connection;
allocating the traffic of the particular network
connection to the particular buffer allocation.
5. The method of Claim 4, wherein the particular buffer
10 allocation includes at least one of:
a portion of the fixed buffer allocation space; and
a portion of the prioritized fair share buffer space.
6. The method of Claim 1, further comprising prioritizing
15 the prioritized fair share queue identifications to have
relative rankings amongst the prioritized fair share
queue identifications.
7. The method of Claim 6, wherein each queue identification
20 is prioritized amongst queue identifications to have 1 of
16 different priority levels.

8. A method of discarding a prioritized fair share of traffic of network connections, the method comprising: receiving traffic of at least a particular network connection;
- 5 filling a portion of a fixed buffer allocation space with traffic of the particular network connection, wherein a buffer in the fixed buffer allocation space is associated with a fixed buffer allocation queue identification;
- 10 filling a portion of a prioritized fair share buffer space with traffic of the particular network connection, wherein a buffer in the prioritized fair share buffer space is associated with a prioritized fair share queue identification; and
- 15 discarding a portion of lowest priority traffic of the network connections.
9. The method of Claim 8, wherein the fixed buffer allocation space is configured to provide a semi-permanent minimum buffer space to each network connection.
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10. The method of Claim 8, wherein the fixed buffer space is configured to provide a guaranteed minimum buffer space to each network connection.
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11. The method of Claim 8, wherein the shared buffer space is configured to provide a non-guaranteed buffer space to each network connection, and is configured to be shared amongst network connections.
12. The method of Claim 10, wherein each prioritized fair share queue identification includes a relative ranking amongst the prioritized fair share queue identifications.
13. The method of Claim 11, wherein a portion size for each network connection is based upon a weighting value assigned to each network connection.
14. The method of Claim 11, wherein the step of filling a portion of the prioritized fair share buffer space comprises comparing buffer usage of the particular network connection with buffer usages of other network connections to obtain a weighting value for the particular network connection.
15. The method of Claim 8, further comprising:
receiving traffic of at least one other network connection;

filling another portion of the fixed buffer allocation
space with traffic of the at least one other network
connection; and

5 filling another portion of the prioritized fair share
buffer space with traffic of the at least one other
network connection.

10 16. The method of Claim 15, wherein the traffic of the
particular network connection has a lower quality of
service value than that of traffic of the at least one
other network connection, and wherein the discarding step
comprises discarding traffic of the particular network
connection.

15 17. The method of Claim 8, wherein the step of filling the
portion of the prioritized fair share buffer space
comprises filling substantially all of the prioritized
fair share buffer space, and wherein the discarding step
is triggered by the step of filling substantially all of
20 the prioritized fair share buffer space.

18. A computer-readable medium carrying one or more sequences
of one or more instructions for discarding a prioritized
fair share of traffic of network connections, the one or
25 more sequences of one or more instructions including

instructions which, when executed by one or more processors, cause the one or more processors to perform the steps of:

5 receiving traffic of at least a particular network connection;

filling a portion of a fixed buffer allocation space with traffic of the particular network connection, wherein a buffer in the fixed buffer allocation space is associated with a fixed buffer allocation queue identification;

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filling a portion of a prioritized fair share buffer space with traffic of the particular network connection, wherein a buffer in the prioritized fair share buffer space is associated with a prioritized fair share queue identification; and

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discarding a portion of lowest priority traffic of the network connections.

19. The computer-readable medium of Claim 18, wherein the fixed buffer allocation space is configured to provide a semi-permanent minimum buffer space to each network connection.

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20. The computer-readable medium of Claim 18, wherein the fixed buffer space is configured to provide a guaranteed minimum buffer space to each network connection.
- 5 21. The computer-readable medium of Claim 18, wherein the shared buffer space is configured to provide a non-guaranteed buffer space to each network connection, and is configured to be shared amongst network connections.
- 10 22. The computer-readable medium of Claim 20, wherein each prioritized fair share queue identification includes a relative ranking amongst the prioritized fair share queue identifications.
- 15 23. The computer-readable medium of Claim 21, wherein a portion size for each network connection is based upon a weighting value assigned to each network connection.
- 20 24. The computer-readable medium of Claim 21, wherein the step of filling a portion of the prioritized fair share buffer space comprises comparing buffer usage of the particular network connection with buffer usages of other network connections to obtain a weighting value for the particular network connection.

25. The computer-readable medium of Claim 18, wherein the instructions further cause the processor to carry out the steps of:

receiving traffic of at least one other network
5 connection;

filling another portion of the fixed buffer allocation
space with traffic of the at least one other network
connection; and

filling another portion of the prioritized fair share
10 buffer space with traffic of the at least one other
network connection.

26. The computer-readable medium of Claim 25, wherein the
traffic of the particular network connection has a lower
15 quality of service value than that of traffic of the at
least one other network connection, and wherein the
discarding step comprises discarding traffic of the
particular network connection.

20 27. The computer-readable medium of Claim 18, wherein the
step of filling the portion of the prioritized fair share
buffer space comprises filling substantially all of the
prioritized fair share buffer space, and wherein the
discarding step is triggered by the step of filling

substantially all of the prioritized fair share buffer space.

28. An integrated circuit configured to discard a priority
5 fair share of traffic of network connections, the
integrated circuit comprising:

controlling circuitry configured to control operations
of:

10 filling a portion of a fixed buffer allocation space
with traffic of the particular network
connection;

filling a portion of a prioritized fair share buffer
space with traffic of the particular network
connection; and

15 discarding a portion of lowest priority traffic of
the network connections.

29. The method of Claim 28, wherein the controlling circuitry
further includes comparison circuitry configured to
20 compare a priority of the particular network connection
with priorities of other network connections to obtain a
weighting value for the particular network connection.

30. The integrated circuit of Claim 28, wherein the controlling circuitry is further configured to control operations of:

filling another portion of the fixed buffer allocation
5 space with traffic of at least one other network connection; and

filling another portion of the prioritized fair share buffer space with traffic of the at least one other network connection.

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31. The integrated circuit of Claim 28, wherein the traffic of the particular network connection has a lower quality of service value than that of traffic of at least one other network connection, and wherein the controlling
15 circuitry is further configured to control discarding of traffic of the particular network connection.

32. The integrated circuit of Claim 28, wherein the controlling circuitry is further configured to trigger
20 the discard operation when a local buffer is substantially filled, wherein the local buffer includes the fixed buffer allocation space and the reserved buffer space.

33. The integrated circuit of Claim 30, wherein the controlling circuitry is further configured to trigger the discard operation when the prioritized fair share buffer space is substantially filled.

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34. The method of Claim 1, wherein the step of designating prioritized fair share buffer space further comprises determining a weighting value for each network connection, and wherein a network connection associated with a higher weighting value is proportionately allocated a greater amount of prioritized fair share buffer space.

36. The method of Claim 1, wherein all of the buffer space is actually allocated to the fixed buffer allocation space, and none of the buffer space is actually allocated to the prioritized fair share buffer space.

37. The method of Claim 1, wherein none of the buffer space is actually allocated to the fixed buffer allocation space, and all of the buffer space is actually allocated to the prioritized fair share buffer space.